basic imagery interpretation report

Rostov Airframe Plant 168 (S)

Strategic Weapons Industrial Facilities
USSR

25**X**1

Secret
WNINTEL

Z-20076/80 RCA-09/0026/80 SEPTEMBER 1980 Copy 4 9



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BACKGROUND

4. (S/D) The airframe plant was constructed on the former site of Plant 458. The new plant began operating during World War II and was redesignated Plant 168 between 1945 and 1949. After the war, trainers and light utility aircraft were produced at the plant. Helicopter production began in 1957. In 1942, the plant contained approximately 48,865 square meters of building floorspace. The plant's floorspace has since been increased by 223,330 square meters to a total of 272,195 square meters. A functional breakdown is presented below.

Function	Floorspace (sq m)	Percentage of Total Floorspace		
Production	179,895	66		
Administration/engineering	25,720	9		
Production support	6,297	3		
General support	40,933	15		
General storage	19,350	7		
Total	272,195	100		

BASIC DESCRIPTION

5. (S/D) Rostov Airframe Plant 168 (Figure 2) is irregularly shaped and consists of two main production areas separated by the flyaway field. The west production area (Figure 3) contains six functional subareas designated A through F. The east production area contains two subareas, I and J (Figure 4). Functional subareas G and H are integral parts of Rostov North Airfield (Figure 5). Tables for the subarea give details of structures in each area.

West Production Area

6. (S/D) The west production area (Figure 3) contains the majority of floorspace at the plant. Functional subareas for this part of the plant include area A, which contains the administration and motor pool facilities; area B, used for subassembly; area C, the assembly area; area D, the main storage and support area; area E, the checkout and preflight area; and area F, the transshipping and storage area. The west production area is primarily engaged in the production of helicopters.

East Production Area

- 7. (S/D) The east production area (Figure 4 and Table 2) may be involved in rotor blade production. Collateral information,3 discussing the blade production process in this area, stated that a special heat treatment and machining process was in use. The process entailed lowering the blades into a furnace and then vertically into an oil-filled cooling chamber for tempering. The blades were cleaned, machined, and finished by a large sanding belt. The blades were brought into contact with the sanding belt by means of an inflatable air bladder.3 Corresponding building features in the east production area can be identified with these processes on overhead imagery. They include numerous vents/stacks for the furnace, a highbay section possibly used for the vertical oil cooling chamber, a compressor building for the air bladder and other air-powered tools, and a POL storage area for cooling oil reserves and other oil products used at the plant.
- 8. (S/D) Functional subareas in the east production area are subarea I (the production

area) and subarea J (a POL storage area).

Rostov North Airfield

- 9. (S/D) Subarea G of the flyaway field contains a 251- by 62-meter concrete runway oriented northeast/southwest and a 1,829- by 1,128-meter sod landing area. Taxiways and parking facilities consist of a concrete parking apron, three large circular concrete hardstands, and three small circular concrete hardstands along a taxiway connecting the east and west production areas (Figure 3).
- 10. (S/D) A radar site is at the east end of the airfield. It contains two height-finding radar; a THIN SKIN A and a THIN SKIN B. In the past, a mobile SMALL CROSS antenna for direction finding and a KNIFE REST radar for air warning have been seen in this area.
- 11. (S/D) Other facilities within area G include a firing-in butt and a training/instructional area along the west side of the subarea. An open storage area is in the north portion of the subarea. A portion of the northern corner of this subarea is being used as tractor storage for a nearby tractor plant, Rostov Agricultural Machinery Plant Rostselmash 1.7 nm to the east-north-

12. (S/D) Subarea H (Figure 5) contains the support and storage facilities for Rostov North Airfield. The facilities include vehicle storage buildings and parking areas for ground support equipment and numerous support structures. A possible equipment trailer or test lift platform is also present (Figure 6). The trailer/platform is canvas covered and is seldom moved.

Production Activity

13. (S/D) As of ______ three models of Soviet helicopters—the HOOK, the HARKE, and the HIND—were in production at Rostov Airframe Plant 168. The plant is also actively engaged in rotor blade production; rotor hubs and associated components may also be produced here.

(Continued p. 7)

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Table 1.
West Production Area at Rostov Airframe Plant 168
(Items keyed to Figure 3)
This table in its entirety is classified SECRET/WNINTEL

Sub Area & Item No			Dimensions on/Function				Date Considered Complete	Remark
A (ADMIN	& MOTOR POOL AREA)						Mar 43	
1	Garage/stor bldg				908	_	Mar 43	
a	Garage/maint sec				_	254	Mar 43	
b	Vehicle storage sec				_	447	Mar 43	
c	Garage/maint sec				_	207	Mar 43	
2	Veh maint & sup bldg				1,065		Mar 43	
а	Veh maint sec					346	Mar 43	
ь	Veh mant sec				_	346	Mar 43	
c	Support sec				_	53	Mar 43	
d	Support sec				_	160	Mar 43	
e	Support sec				_	160	Mar 43	
3	Admin, engr bldg				2,863	_	Mar 43	
a	Engr/support sec				_	46	Mar 43	
ь	Engr/support sec				_	169	Mar 43	
c	Engr/support sec				_	402	Mar 43	
d	Engr/support sec					572	Mar 43	
e	Covered entryway				NA	NA	Mar 43	
f	Admin sec					1.494	Mar 43	
4	Admin/engr bldg				4,491		Mar 43	
a	Admin/engr				_	1,512	Mar 43	
ь	Firehouse garage				_	272	Mar 43	
c	Admin/support sec				_	1,006	Mar 43	
d	Support sec				_	1,118	Mar 43	
e	Firehouse support				_	494	Mar 43	
f 5	Firehouse tower				311	49	Mar 43	
a a	Recreation center Support sec				311	19	Jun 63 Jun 63	
5	Gymnasium				_	92	Jun 63	
c	Support sec				_	200	Jun 63	
d	Open-air theater				NA -	NA	Jun 63	
	SEMBLY AREA)						3 Uli 03	
1	Prob warehouse				616	_	Mar 43	
a	Warehouse sec				_	321	Mar 43	
5	Stor sec				_	214	Mar 43	
c	Stor sec				_	81	Mar 43	
2	Shop bldg				641		Jun 63	
3	Support bldg				109	_	Jun 63	
a	Support sec				_	21	Jun 63	
Ь	Support sec				_	88	Jun 63	
4	Machine shop & forge sec				35.859			
a	Muchine shop & forge sec					15.952	Jun 63	
ь	Support sec					2,214	Jun 63	
c	Entry					314	Jun 63	
d	Shop					253	Jun 63	
ė	Shop					739	Mar 43	
f	Poss forge sec					155	Jan 65	
g	Shop				_	280	Jan 65	
5	Shop				133	_	Jan 65	
6	Shop				185	_	Jan 65	
7	Maint bldg				657	_	Jul 74	
8	Shop bldg				3.656	_	_	
3	Shop sec				_	2,797	Mar 43	
ь	Support sec				_	859	Mar 43	
9	Warehouse				1,473	_	_	
а	Warehouse sec					1.227	Apr 62	
ь	Support sec				_	123	Apr 62	
10	Shop bldg				1.176	_	_	
d	Support sec				_	69	Mar 43	
ь	Support sec				_	111	Mar 43	
c	Shop sec				_	996	Mar 43	
11	Support bldg				59	_		
12 a	Fab bldg				19,659	419	· · ·	
b	Support sec Support sec				_	1,539	Mar 43 Mar 43	
c	Entry sec				_	1,539	Mar 43 Feb 76	
d	Support sec				_	454	Mar 43	
e	Storage sec					324	Feb 76	
ſ	Fab sec					13.019	Mar 43	
g	Shop sec					1,441	Feb 76	
h h	Support sec				_	697	Feb 76	

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Sub Area & Item No	Description/Function	L	Dimensions (m) W	н	Floo	otal orspace Sec	Date Considered Complete	Remarks	Sub Area & Item No	Description/Function	L	Dimensions (m) W	н		otal orspace Sec	Date Considered Complete	Remarks
13	Fab bldg				5,958	_	_		27	Shop/support bldg				3.049	_		0
a	Fab sec				-	911	Jun 43		a	Prob shop sec				_	2,724	Aug 78	2:25X
b c	Support sec				_	4,954	Jun 43		ь	Support sec					325	Aug 78	
c 14	Storage sec Shop bldg				909	93	Jun 43		28 29	Stor bldg Stor bldg				372 372	_	Jan 77	
a	Support sec				909	698	Mar 43		30	Stor bldg				372	_	Apr 76 Feb 71	
ь	Shop sec					200	Mar 43	Refurbished Jul 79	1					372	_	1 60 71	
15	Inflatable bldg				223*	_	Oct 77		E (CHECKO	OUT & PREFLIGHT AREA)							
16	Storage bldg				372	_	Apr 76		1	Support bldg				353	_	_	
17	Warehouse				727	_	May 77		a	Support sec					336	Apr 62	
18	Support bldg				74	_	Apr 62		b	Support sec				_	17	Apr 62	
C (ASSEMB	BLY AREA)								2	Hangar				8,665	–		
1	Assem bldg				27,446		_		a b	Hangar				_	6,363 2,302	Apr 62	
a	Engr sec				27,440	4,312	Jun 75		3	Support sec Stor bldg				19	2,302	Apr 62 Apr 62	
ь	Subassem sec				_	15,716	Apr 62		4	OPS/control bldg				1,050	_	Mar 43	
c	Final assem sec				_	6,695	Apr 62		E /TB (NOC	HIPPING & STORAGE AREA							
d	Entry				_	207	Jun 75		F (TRANSS								
e	Stor sec					428	Jun 75		1	Stor bldg				691	_	Aug 71	
2	Assem area				24,249				2	Transshipping bldg				3,564	_		
a b	Subassem Final assem sec				_	4,834 16,601	Mar 43 Mar 43		a	Transshipping sec				_	2,116	Feb 71 Feb 71	
c.	Entry				_	16,601			3	Transshipping sec				456	1,448		
d	Engr sec				_	2,567	Aug 68 Mar 43		4	Stor bldg Support bldg				440	_	Oct 77 Apr 62	
ė	Support sec				_	97	Mar 43		5	Stor bldg				372	_	Apr 02 Aug 70	
D (SI IDDO)	RT & STORAGE AREA)								6	Stor bldg				372	_	May 77	
D (SUFFUR									7	Stor bldg				372	-	May 77	
1	Admin bldg				597	-	_		8	Stor bldg				372 372	_	Jun 75	
a	Admin sec				_	321	Mar 43		10	Stor bldg				372	_	Aug 71	
b 2	Admin sec					276	Mar 43		11	Stor bldg Stor bldg				372	_	Aug 69 Aug 69	
4	Support bldg				642	 51			12	Stor bldg				372	_	Mar 68	
a b	Support sec Support sec				_	31 86	Apr 62		13	Shipping container shop				5,313	_	.1111 00	
c	Support sec				_	229	Apr 62 Apr 62		a	Fab bldg				-	3,126	Mar 43	
3	Stor bldg				932				ь	Assem bldg				_	914	Aug 62	
a	Stor sec				_	367	Apr 62	Sec A & B connected	c	Support sec				_	521	Mar 43	
								by passageway	d	Support sec				-	697	Mar 43	
4	Stor shed				142				14	Poss wood stor bldg				6.140	_	Aug 62	
a	Stor sec				_	86	Apr 62		15	Carpentry shop Shop sec				1,798	990	Apr 62	
ь	Stor sec Steam/powerplant				2,390	56	Apr 62	Coal and oil fired	a b	Shop sec				_	779	Apr 62	
	Prob boiler room				2,390	1,235	Mar 43	Coal and oil fired	c	Support sec				_	29	Apr 62	
b	Prob generator hall				_	727	Mar 43		16 17	Warehouse				4,465	-	Jan 65	
c	Poss control/admin bldg				_	279	Mar 43		17	Warehouse Support bldg Transshipping bldg				93	_	Mar 68	
d	Support sec				_	149	Mar 43		18 a	Transshipping bldg Transshipping sec				1,848	966	Mar 43	
6	Storage bldg				83	_	May 77		b	Transshipping sec					424	iviai 45	
7	Prob pumphouse				44	_	Mar 43		c	Transshipping sec					458	Mar 43	
8	Support bldg				70	_	Apr 62		19 20	Stor bldg Support bldg				275 71	_	Mar 43	
10	Stor bldg Stor shed				114 49	_	Apr 62		a a	Support sec					54	Mar 68	
11	Stor bldg				270	_	Apr 62 Apr 62		ь	Support sec				_	17	Mar 68	
12	Stor bldg				130	_	May 77		21	Stor bldg				150	_	Mar 68	
13	Stor bldg				56	_	Apr 62		22	Stor bldg				372	-	Mar 68	
14	Prob pump house				120	_	Apr 62		23	Stor bldg				372	_	Mar 68	
15	Support bldg				2,131	_	_		G (ROSTO)	V NORTH AIRFIELD)							
a	Support sec				_	1,499	Aug 70		1	Support				30		Apr 62	
b c	Support sec Support sec				_	36 326	Aug 70		2	Training bldg				402		Apr 62 Apr 62	
16	Support sec Support bldg				443	326	Aug 70		a	Training diug				402	134	Apr 62 Apr 62	
a	Support sidg Support sec				443	300	Jan 75		b	Training sec					268	Apr 62	
b	Support sec				_	109	Jan 75 Jan 75		3	Firing-in butt				65	_	Apr 62	
c	Support sec				_	34	Jan 75		4	Kennel				NA	_	_	Prob for plant security
17	Shop bldg				647	_	_		5	Support bldg				42		Aug 69	
a	Support sec				_	107	Apr 62		6 7	GCA bldg Support bldg				101	_	Oct 73 Jul 77	
ь	Shop sec				_	196	Apr 62		8	Control tower				55 80	_	_	
c d	Support sec				_	124	Apr 62		a	Tower sec				_	. 8	Nov 77	
a 18	Shop sec Shop bldg				437	220	Mar 43		96	OPS sec Support bldg				24	32	Nov 77 Aug 71	Possibly not part
a	Shop blug Shop sec				43/	359	Mar 43								_		of item 168
b	Support sec				_	78	Mar 43		10	Stor bldg				205	_	Aug 77	
19	Support bldg				150	/6	Apr 62		11	Stor shed				287	_	_	
20	Stor bldg				221	_	Apr 62		a	Stor sec				_	151	Oct 77	
21	Stor bldg				400		Aug 70		ь	Stor sec				l -	136	Oct 77	
22	Shop bldg				762	_	Mar 43		12	Stor shed				146	_	Oct 77	
23	Stor bldg				55	_	Aug 62		13 14	Stor shed				59 14	-	Oct 77	
24	Stor bldg				372	_	Jan 75		15	Stor shed Stor shed				287	_	Oct 77 Oct 77	
25 26	Stor bldg				372	_	Jan 77		16	Stor shed				110	_	Oct 77	
20	Stor bldg				377	262	-		17	Stor shed				129	_	Oct 77	
a b	Stor sec Stor shed				_	363 14	Apr 62		18	Stor shed				391		Oct 77	
					_	14	Jan 78		1								



Table 2.
East Production Area at Rostov Airframe Plant 168 (Items keyed to Figure 4)

This table in its entirety is classified SECRET/WNINTEL.

Sub Area			Dimensions			Total	Date	
& Item No	Description/Function	(m)				orspace	Considered	Remarks
		L.	W	Н	Bldg	Sec	Complete	
I (EAST PR	ODUCTION AREA)					-		
1	Prob compressor bldg				770	_	_	
a	Support sec					38	Mar 68	
b	Prob compressor sec				_	693	Mar 68	
e	Support sec				-	39	Mar 68	
2	Final & sub assem bldg				68,779	_	_	
a	Admin/engr sec				_	5,765	Aug 70	
ь	Special function sec					950	Aug 70	
c	Sub assem sec				_	36,470	Aug 70	
d	Stor sec				_	48	Mar 69	
e	Entry sec				_	98	Mar 69	
f	Final assembly sec				_	13,810	Jun 74	
g	Support sec				_	52	Jun 74	
ĥ	Support sec					127	Jun 74	
i	Support sec				_	218	Mar 69	
i	Support sec				_	46	Jun 74	
k	Admin/engr secs (4)				_	2.085	Jun 74	Max height
1	Support bldg				162	2.000	May 78	.via v neight
4	Stor bldg				568	_	May 76	
a	Stor sec				.00	518	Mar 68	Max roof heigh
b	Stor sec				_	40	Mar 68	wax roor neigh
5	Support bldg				133	-+()	May 77	
6	Support bldg				67	_	Dec 79	
7	Shop bldg				573	_	Aug 79	
8	Control bldg				345	_	Aug 79	
a	Control sec					241	Oct 73	
h	Stor sec					94	Oct 73	
9	Stor shed				559	94		
10	Induced-draft cooler				NA	NA -	May 79	
H						NA	Jun 75	
	Admin/engr bldg				3,210	2.210	1 75	
a b	Admin/engr sec				NA -	3.210 NA	Jun 75 Jun 75	
12	Overhead walkway sec Shop bldg					NA	Jun 75	
					4,717	1 / 1/5	1 26	
a L	Shop sec				_	4,685	Jun 75	
ь	Stor sec					32	Jun 75	
13	Support bldg				183	_	Aug 74	
14	Admin bldg				454	***************************************	Feb 71	
J (POL STO	DRAGE AREA)							
1	Support bldg				86	_	Apr 76	
2	Support bldg				385	_	Oct 72	
3	Support bldg				137	_	Apr 63	
4	Pumphouse				181	_	Sep. 73	
5	Pumphouse				174	_	Apr 76	
6	Control bldg				68	_	Oct 77	

HOOK Production

14. (S/D) The HOOK helicopter, designated the MI-6, was designed in the early 1950s by the MIL OKB and was first identified at Moscow Khimki Airfield in October 1957. Production of the HOOK at Rostov 168 probably started as early as 1959. However, usable satellite imagery of the plant was not obtained until April 1966.

15. (S/D) Production rates cannot be determined from imagery alone but trends do appear when the average monthly counts of HOOK are plotted on a graph (Figure 7). The first noticeable trend was a decline in production between 1973 and mid-1975 when no HOOK were observed. This decline in production may have been caused by a shift in priorities and resources in favor of HIND assembly at the plant. The first sighting of HIND at Rostov 168 was in September 1973.

16. (S/D) A second trend can be found in the reduced counts after 1975. Between 1975 and 1980, approximately four HOOK per month were observed. Before 1975, it was seven per month. Again, the reduced sightings of HOOK was offset by an increase in the HIND count (Figure 8).

17. (S/D) The function of the HOOK has also been changing over the past several years. Two new HOOK-type helicopters have been identified—the HOOK airborne command post (ACP) (Figure 9) and the special purpose (SP) HOOK (Figure 10). Between 1979 and mid-1980 the majority of HOOK sightings have been of HOOK ACP and HOOK in civilian-type paint schemes.

18. (S/D) The HOOK ACP was previously identified as the HOOK Variant; however, an examination of available imagery has revealed its function to be that of an airborne command post aircraft. Deployments of HOOK ACP to known headquarterstype units and its presence with a COOT ACP and a HIP D in a tactical weapons display at Moscow Central Airfield support this theory.

HARKE Production

19. (S/D) HARKE helicopters are also produced at Rostov 168. They were first seen at the Tushino Airshow in July 1961 and were a spinoff of HOOK development in the 1950s. The rather limited sightings of HARKE at Plant 168 in recent years may indicate a substantially reduced need for additional aircraft of this type. New developments in heavy-lift helicopter (HLH) technology and the

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observation of a new HLH, the HALO A, may also indicate that a replacement for the HARKE is forthcoming.

20. (S/D) Two models of HARKE have been seen at Rostov 168—The MI-10 HARKE with long legs and the MI-10K with short legs. Most sightings have been of HARKE MI-10K in Aeroflot paint schemes.

HIND Production

21. (S/D) Both the HIND A and the HIND D have been seen at this plant. The main helicopter now in production at Rostov 168 is the HIND D. The HIND A (Figure 11) was first seen in June 1971 at Luburtsy Experimental Helicopter Plant Kaand the HIND D was identified at Arsenyev Airframe Plant 116 May 1975. It is not known if HIND A was actually in production at Rostov 168 or if the plant was used as an assembly point for Arsenyev 116-produced HIND A. Nevertheless, the HIND A program was eclipsed by with the sighting of the first HIND D-type helicopter at Rostov 168. The HIND D observed was possibly a converted HIND A. It displayed a D-type double canopy; however, it had an antitorque rotor on the starboard side like the HIND A. The presence of this helicopter may indicate that the HIND A previously observed at Rostov 168 were there for conversion to HIND D. This may explain why a HIND D was at Rostov 168 more than a year before HIND D were first identified at Arsenyev.

22. (S/D) The graph of HIND D sightings (Figure 8) shows a significant increase in the number of helicopters present beginning immediately after the Soviet invasion of Afghanistan. The increase in production was first apparent in December 1979 when nine HIND D were observed at the plant. The high count of 24 HIND D occurred on

The dramatic increase in counts, in response to the increased need, took place only four months after the invasion.

Shipping Containers

23. (S/D) Both HOOK and HIND rotor blade shipping containers have been identified at Rostov 168 (Figure 12). The HOOK rotor blade shipping container is _______ The HIND rotor blade container is _______ The meters.

24. (S/D) On photography of a new shipping container (type C) for the HIND was identified in the west production area of the plant (Figure 13). Similar HIND containers have

25X1 25X1 25X1 also been seen in Iraq.4 These type C containers are A single square tab is 25X1 situated slightly off center on the top of the crate. An associated component crate, 25X1 meters, was also observed at the plant (Figure 12). 25. (S/D) Other shipping containers seen at the plant include possible HOOK wing shipping containers (Figure 14), possible rotor hub component containers (Figure 15), and an unidentified container (Figure 16) usually seen in the transloading 26. (S/D) The HOOK wing container is and probably contains the packing elements shown in Figure 14. The uniden-

tified component shipping containers (Figure 16)

have a sloped roof and two dark-toned bands

across the top. They are

in height.

25X1

25X1

25X1

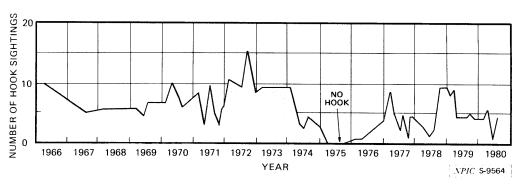


FIGURE 7. AVERAGE MONTHLY HOOK SIGHTINGS AT ROSTOV AIRFRAME PLANT

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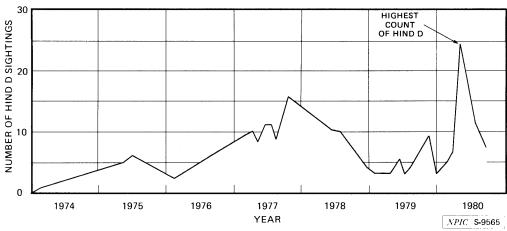
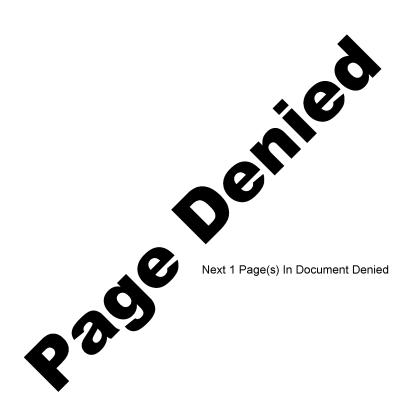


FIGURE 8. AVERAGE MONTHLY HIND D SIGHTINGS AT ROSTOV AIRFRAME PLANT 25X1

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REFERENCES	
MAGERY	
(S/D) All available satellite imagery acquired of this plant up to and including coverage of was used in the preparation of this report.	2
MAPS OR CHARTS	
DMA. US Air Target Chart, Series 200, Sheet 0249-8HL, scale 1:200,000 (SECRET)	
SAC. US Air Target Chart, Series 200, Sheet 0249-9HL, scale 1:200,000 (SECRET) DMAAC. US Air Target Chart, Series 200, Sheets 0249-3 and -4HL, scale 1:200,000 (SECRET)	
DOCUMENTS	
1. NPIC. RCA-09/0009/76, Rostov Airframe Plant 168, Oct 75 (TOP SECRET	2

REQUIREMENT

2. <u>DIA</u>.

4. NPIC.

3.

COMIREX J02 Project 200026DJ

(S) Comments and queries regarding this report are welcome. They may be directed to Warsaw Pact Forces Division, Imagery Exploitation Group, NPIC,

New-Type HIND Containers, Mar 79 (TOP SECRET

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25X1 25X1

25X1 25X1 25X1

RDA-11/0001/71, Rostov Airframe Plant 168, Sep 70 (TOP SECRET

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